

## Polynomials Quiz

Date \_\_\_\_\_ Period \_\_\_\_\_

**Factor each. Find the zeros and state the multiplicities if there are any.**

1)  $2x^4 - 13x^2 + 15 = 0$

2)  $3x^4 - 29x^2 + 18 = 0$

3)  $x^3 - 8 = 0$

4)  $x^3 + 1 = 0$

**Divide.**

5)  $(b^4 - 16b^3 + 60b^2 + 29b - 46) \div (b - 7)$

6)  $(-2v^5 + 24v^4 - 32v^3 - 87v^2 + 72v - 28) \div (v - 10)$

7)  $(7x^5 + 43x^4 + 82x^3 + 48x^2 - 7) \div (7x + 8)$

8)  $(7n^5 + 55n^4 + 14n^3 - 52n^2 - 94n - 57) \div (7n + 6)$

**State the possible rational zeros for each function. Then factor each and find all zeros.**

9)  $f(x) = 2x^4 + 17x^2 - 9$

10)  $f(x) = 3x^3 - 5x^2 + x + 1$

## Answers to Polynomials Quiz (ID: 1)

1)  $(x^2 - 5)(2x^2 - 3) = 0$

2)  $(3x^2 - 2)(x - 3)(x + 3) = 0$

3)  $(x - 2)(x^2 + 2x + 4) = 0$

4)  $(x + 1)(x^2 - x + 1) = 0$

5)  $b^3 - 9b^2 - 3b + 8 + \frac{10}{b - 7}$

6)  $-2v^4 + 4v^3 + 8v^2 - 7v + 2 - \frac{8}{v - 10}$

7)  $x^4 + 5x^3 + 6x^2 - \frac{7}{7x + 8}$

8)  $n^4 + 7n^3 - 4n^2 - 4n - 10 + \frac{3}{7n + 6}$

9) Possible rational zeros:

$$\pm 1, \pm 3, \pm 9, \pm \frac{1}{2}, \pm \frac{3}{2}, \pm \frac{9}{2}$$

Factors to:  $f(x) = (x^2 + 9)(2x^2 - 1)$

Zeros:  $\left\{ 3i, -3i, \frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2} \right\}$

10) Possible rational zeros:  $\pm 1, \pm \frac{1}{3}$

Factors to:  $f(x) = (x - 1)^2(3x + 1)$

Zeros:  $\left\{ 1 \text{ mult. } 2, -\frac{1}{3} \right\}$